

Turning The Tide On Tires

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CIWMB Tire Diversion Rates

1990

34%

2004

~75%

Tire Diversion Strategies

- Tire Derived Fuel
- Rubberized Asphalt Concrete
- Civil Engineering Applications
- Crumb Rubber Products
- Landfill Applications (ADC)
- Retreading/Resale
- Miscellaneous

Tire-Derived Fuel











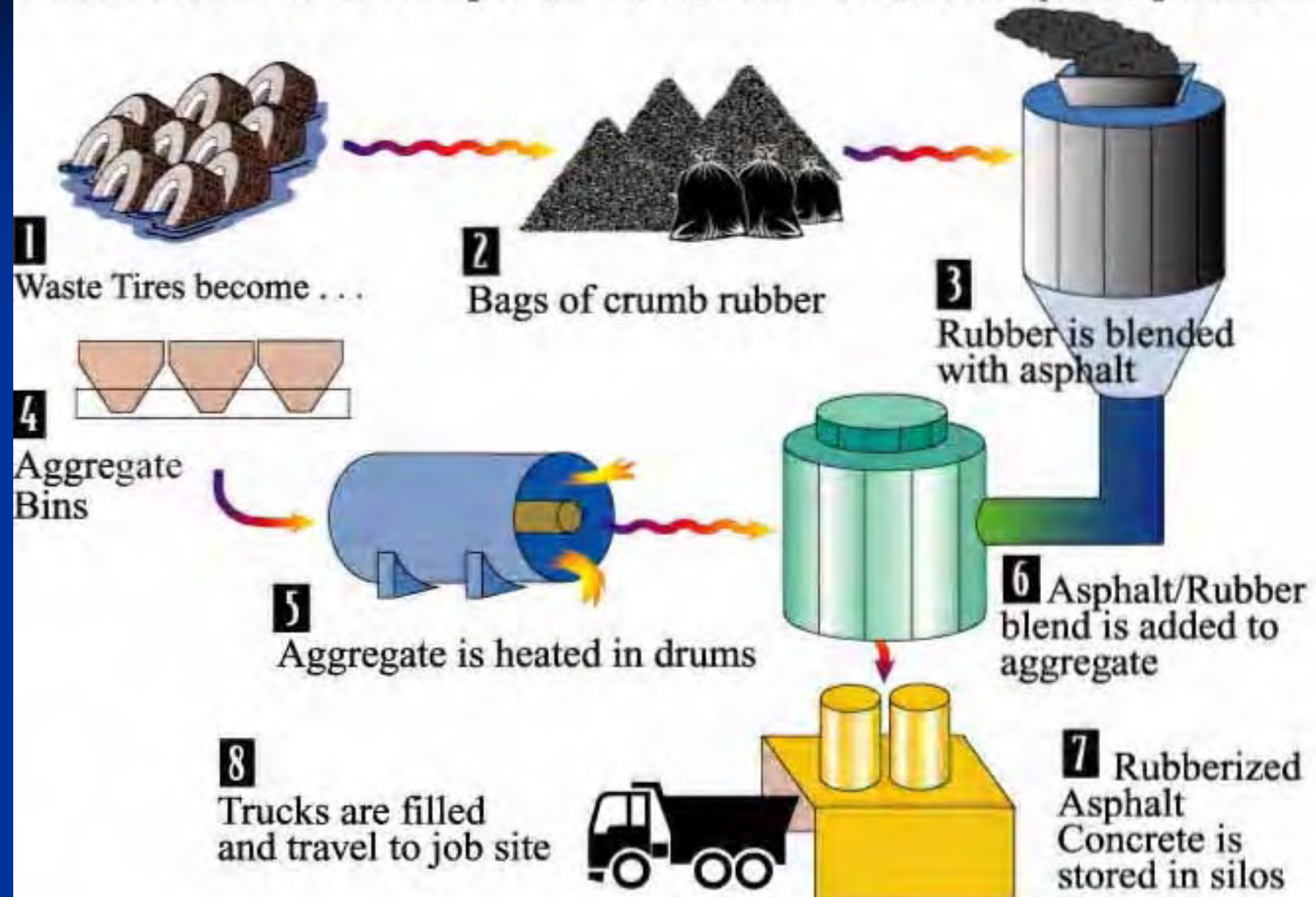




- TDF accounts for 27% of tire diversion in California (8.1M pte)
- TDF accounts for 45% of tire diversion in the U.S.

Rubberized Asphalt Concrete (RAC)

How Rubberized Asphalt Concrete Is Made (wet process)



Rubberized Asphalt Concrete

- RAC has been a key strategy from the start
- Over \$20 million allocated to date for RAC activities
- Activities have included technical research, RAC construction projects and local government grants

Caltrans – CIWMB Activities

- \$3.3 million allocated to date
- Technical Research Interagency Agreements
 - 1991-Lab Test Equip & Air Monitoring
 - 2003-State of the Art & Recycling
- Construction Projects
 - 1993 Maintenance Project – Hwy 16
 - 2004 Overlay Project – Hwy 33

Direct Local Government Assistance

- Provided RAC grants to local governments since 1992
- \$10 million awarded to date
- Have awarded over 225 RAC grants to over 80 jurisdictions

Indirect Local Government Assistance

- RAC Technology Centers
 - Partnered with Los Angeles County in 1997 to create the first statewide center; established the Northern center with Sacramento County in 2000
 - The center was created to promote the use of RAC by local governments via peer to peer
 - Allocated \$2.8 million to date
- Technology transfer now offered through a contract with MACTEC Engineering and Consulting

02-288504-TRI-299-49.7/53.5 Weaverville 95



03-366304-ED-50-34/39.3 Ice House 96



04-OC2404-SCL-880-4.3/6.7 S.Jose 96



05-419404-Mon-101-R1.9/R9.5 Bradley 96



10-401324-SJ-99-10/14.1 Stockton 96



10-484204-SJ-132-6.0/6.0 Vernalis 96



11-155194-IMP-111-0.0/1.7 Calexico 96



11-218504-SD/IMP-8-0.0/1.7/6.7/10 97



12-0646U4-ORA-1-7.3/?? Laguna Beach 99



RAC 9 Months Old (Left).10 ft Thick
AC 4 Months Old (Right).10 ft Thick

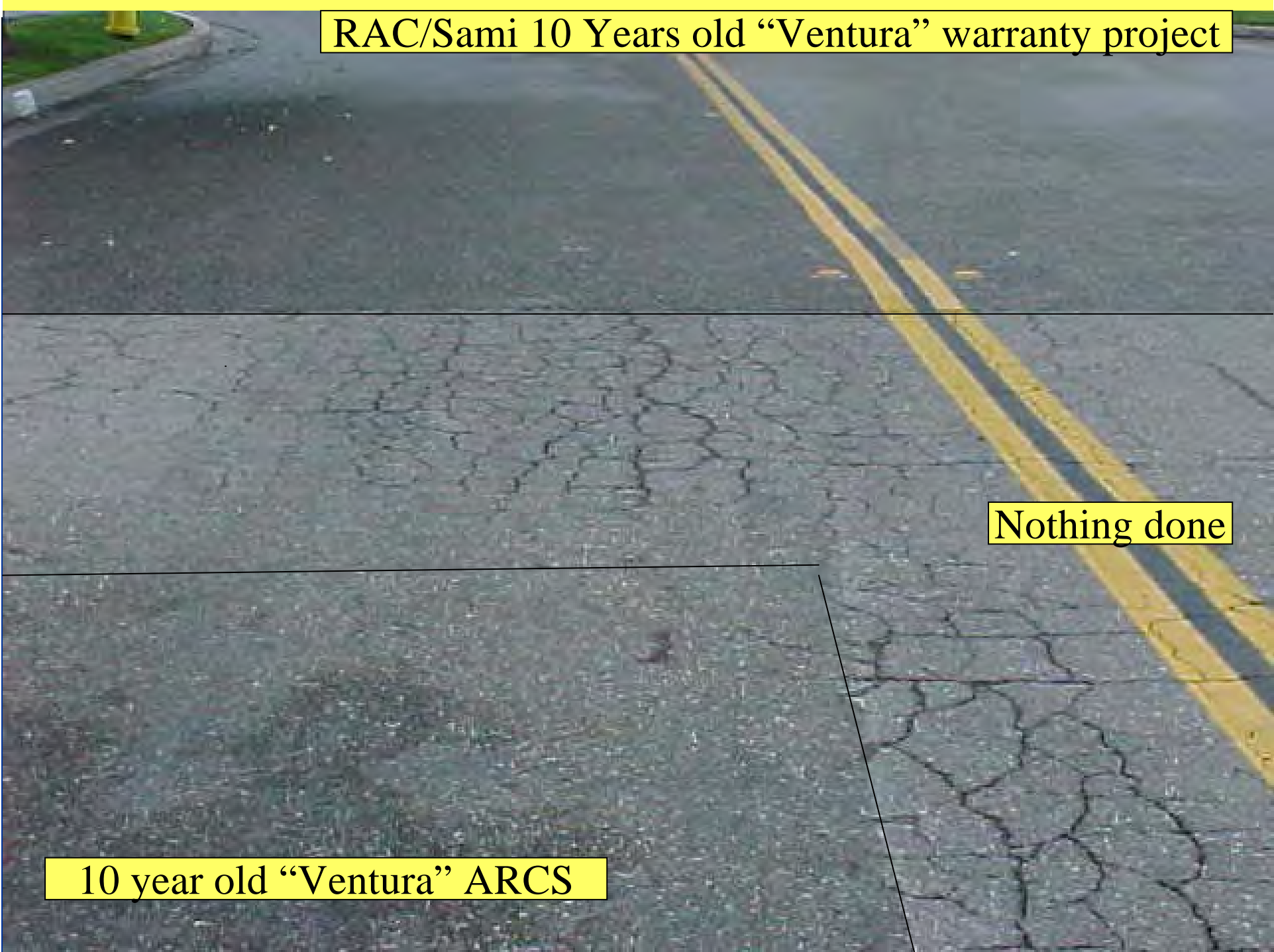


AC 4 months Old (Above).10 ft Thick
RAC 9 Months Old (Below).10 ft Thick



AC 4 months Old (Below) .10 ft Thick
RAC 9 Months Old (Above).10 ft Thick





RAC/Sami 10 Years old “Ventura” warranty project

Nothing done

10 year old “Ventura” ARCS

Same picture, different angle



10 year old ARCS

Nothing Done

10 year old RAC/Sami

RAC/Sami 10 Years Old

Nothing Done Here



District 3-1 in. RAC-O over PCC



Benefits of RAC

- Retards reflective cracking better than conventional AC
- Demonstrated noise reduction properties
- Can be used in thinner sections
- Cost effective
- Can be used in all climate zones

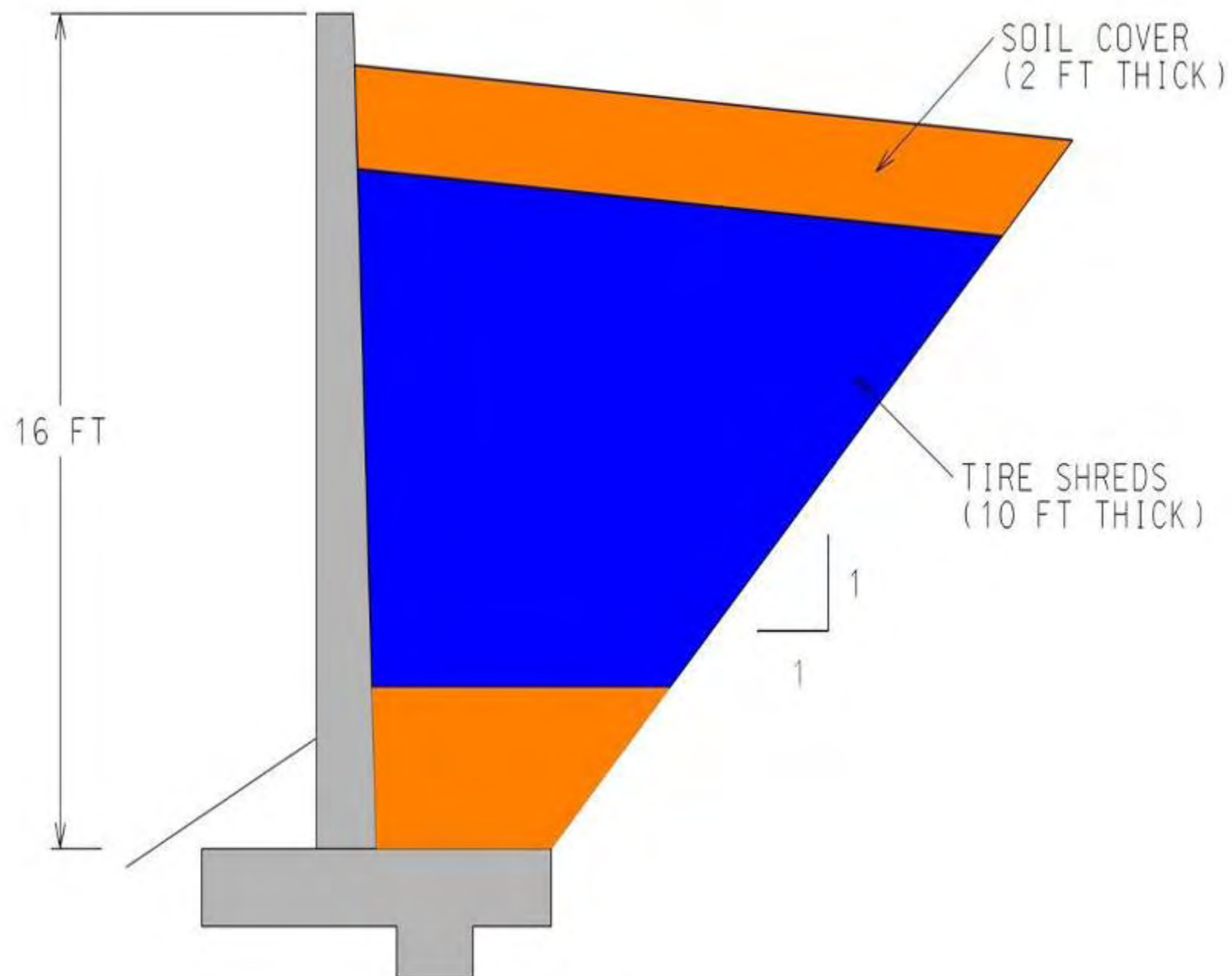
Civil Engineering Applications Using Shredded Tires

Tire-Derived Aggregate (TDA)



Tire-Derived Aggregate

Route 91, Retaining Wall Project
Riverside Calif.



Route 91 Retaining Wall Under Construction



Placement of Tire-Derived Aggregate



800 Tons of Shreds=80,000 tires



Geosynthetic Cover Wrapped Around Shreds

